

CLAIMS

1. A method to produce a panel assembly, in particular a panel assembly for use in a vehicle opening, comprising a panel (2) and a gasket (1), which gasket is adhered to the panel, extends along at least a portion of the periphery thereof and has a surface, at least a portion (25) of which is moulded against a solid surface, the method comprising the steps of:
- providing a mould (7, 8) having at least one mould surface (6);
 - placing the panel (2) and the mould surface (6) against one another;
 - 10 – applying a curable composition for producing said gasket (1) directly or indirectly on the mould surface and directly or indirectly onto said panel, the curable composition having a dynamic viscosity, measured at a shear rate of 1/s, lower than 100 000 mPa.s when it arrives onto at least a portion of the mould surface;
 - 15 – allowing the applied curable composition to cure against said solid surface, formed at least by said panel (2) and by said mould surface (6), to produce the gasket (1); and
 - removing the panel (2) and the gasket (1) produced thereon from the mould (7, 8),
- 20 characterised in that
- the curable composition is applied by means of an applicator device (9) moving along at least said portion of the periphery of the panel (2) while applying the curable composition.
2. A method according to claim 1, characterised in that the
- 25 curable composition is applied and allowed to cure until the gasket is produced without exerting a pressure onto the mould surface (6) which is higher than 500 mbar, preferably without exerting a pressure onto the mould surface which is higher than 350 mbar, more preferably without exerting a pressure onto the mould surface which is higher than

150 mbar and most preferably without exerting a pressure onto the mould surface which is higher than 50 mbar.

3. A method according to claim 1 or 2, characterised in that, when curing the curable composition, said solid surface only partially
5 surrounds the gasket (1) so that said portion (25) of the surface of the gasket is allowed to cure in contact with said solid surface while a further portion (26) of the surface of the polymeric (1) is simultaneously allowed to cure in contact with a gas (19) until the gasket is produced.

4. A method according to any one of the claims 1 to 3,
10 characterised in that, when arriving onto said portion of the mould surface (6), the dynamic viscosity of the curable composition is lower than 75 000 mPa.s, preferably lower than 35 000 mPa.s, more preferably lower than 10 000 mPa.s and most preferably lower than 5 000 mPa.s.

5. A method according to any one of the claims 1 to 4,
15 characterised in that said curable composition is applied by means of said applicator device (9) directly onto said mould surface (6) and also directly onto said panel (2).

6. A method according to any one of the claims 1 to 5, characterised in that the curable composition is spread out in at least
20 one direction in said applicator device (9) before leaving the applicator device, the curable composition being preferably spread out in the applicator device by dividing it in the applicator device into at least two, preferably at least three individual streams (17) leaving the applicator device and/or by spreading out at least one stream of the curable
25 composition in said applicator device (9) so that, upon leaving the applicator device, said stream has a smallest and a largest cross-sectional dimension, the largest cross-sectional dimension (L) being greater than three times the smallest cross-sectional dimension, preferably greater than five times the smallest cross-sectional dimension

and more preferably greater than ten times the smallest cross-sectional dimension.

7. A method according to any one of the claims 1 to 6, characterised in that the applicator device (9) is maintained at a distance
5 (D) from said solid surface when applying the curable composition thereon, and the curable composition is sprayed by means of the applicator device onto said solid surface.

8. A method according to claim 7, characterised in that the curable composition is sprayed in accordance with a spray pattern, at
10 least one cross-sectional dimension (W) of which increases towards said solid surface, said at least one cross-sectional dimension (W) increasing in particular over a distance d from the applicator device with at least $0.05 \times d$, and preferably with at least $0.1 \times d$.

9. A method according to claim 7 or 8, characterised in that
15 the distance (D) from which the curable composition is sprayed is greater than 10 mm and preferably greater than 20 mm.

10. A method according to any one of the claims 7 to 9, characterised in that the curable composition is sprayed in the form of a film (15) and/or in the form of droplets (16) onto said solid surface.

20 11. A method according to claim 10, characterised in that said film (15) has a thickness smaller than 2 mm, and preferably smaller than 1 mm.

12. A method according to any one of the claims 1 to 11, characterised in that the curable composition is applied in at least one
25 layer onto said solid surface, which layer has an average thickness smaller than 5 mm, preferably smaller than 3 mm, more preferably smaller than 2 mm and most preferably smaller than 1 mm.

13. A method according to any one of the claims 1 to 12, characterised in that the curable composition is applied in at least one
30 layer onto said solid surface, which layer has an average thickness

larger than 0.1 mm, preferably larger than 0.25 mm, and more preferably larger than 0.4 mm.

14. A method according to any one of the claims 1 to 13, characterised in that said mould surface (6) is formed at least partially
5 but preferably substantially entirely by a resilient material having in particular a shore A hardness smaller than 90 and preferably smaller than 60, said resilient material being in particular a moulded silicone material.

15. A method according to any one of the claims 1 to 14,
10 characterised in that said mould surface (6) is formed by a self-release material requiring no coating of a release agent to enable to remove the gasket from the mould surface, the self-release material being in particular a silicone material or PTFE.

16. A method according to any one of the claims 1 to 15,
15 characterised in that the panel (2) has a first (3) and a second major face (4) and a peripheral edge face (5) and the panel (2) and the mould surface (6) are placed against one another in such a manner that said mould surface (6) engages the first major face (3) of the panel (2) and has a portion which projects beyond the peripheral edge face (5) thereof.

20 17. A method according to claim 16, characterised in that a cutting edge (11) is provided on said portion of the mould surface (6) which projects beyond the peripheral edge face (5) of the panel (2), said cutting edge (11) forming a first edge of the gasket (1).

18. A method according to claim 16 or 17, characterised in
25 that the second major face (4) of the panel (2) is provided with a mask (12) which is removed after having applied the curable composition and which forms a second edge of the gasket (1).

19. A method according to claim 18, characterised in that said mask (12) is formed by a foil (14) or a tape which is releasably

adhered to the second major face (4) of the panel (2) and which extends substantially to the peripheral edge face (5) of the panel (2).

20. A method according to any one of the claims 1 to 19, characterised in that, before applying said curable composition, an in-
5 mold paint is first applied at least onto said mould surface.

21. A method according to any one of the claims 1 to 20, characterised in that said curable composition is applied in at least two layers.

22. A method according to claim 21, characterised in that
10 said curable composition comprises a first curable composition, which is used to apply a first layer, and a further curable composition, which is used to apply a further layer on top of the first layer, the further curable composition being preferably an aromatic reactive polyurethane mixture.

23. A method according to any one of the claims 1 to 22,
15 characterised in that after having produced the gasket (1), a flexible foam arranged to form a seal (21) is applied on a back side of the gasket (1) and/or on the panel (2), the flexible foam having a density lower than 400 kg/m³, preferably lower than 300 kg/m³ and more preferably lower than 200 kg/m³.

20 24. A method according to any one of the claims 1 to 23, characterised in that said curable composition comprises a polyurethane reaction mixture formulated to produce an elastomeric polyurethane material having a density higher than 400 kg/m³, and preferably higher than 500 kg/m³.

25 25. A method according to any one of the claims 1 to 23, characterised in that said curable composition is formulated to produce a foam, having in particular a density lower than 400 kg/m³, and more particularly lower than 250 kg/m³, the curable composition comprising preferably a blowing agent and the curable composition being preferably
30 allowed to foam on said solid surface to produce the polymeric foam.

26. A method according to any one of the claims 1 to 25, characterised in that an insert (22, 24, 27) is fixed to the panel by covering the insert at least partially with the curable composition when applying the curable composition to produce the gasket (1).

5 27. A method according to any one of the claims 1 to 26, characterised in that said applying step comprises the step of allowing the curable composition to flow out over said solid surface.

28. A panel assembly, in particular for use in a vehicle opening, comprising a panel (2) and a gasket (1) adhered to a portion of
10 the surface of said panel and extending along at least a portion of the periphery thereof, characterised in that the panel assembly is obtained by the method according to any one of the claims 1 to 27 and the gasket (1) has a surface, a portion (25) of which is produced against a solid surface whilst a further portion (26) of which is produced in contact with a
15 gas (19).

29. A panel assembly according to claim 28, characterised in that said further portion (26) of the surface of the gasket (1) is a free formed surface, in particular a sprayed surface.